CAPITAL IMPROVEMENT PROGRAM UPDATE

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Polish American Engineers Association
Chicago, IL
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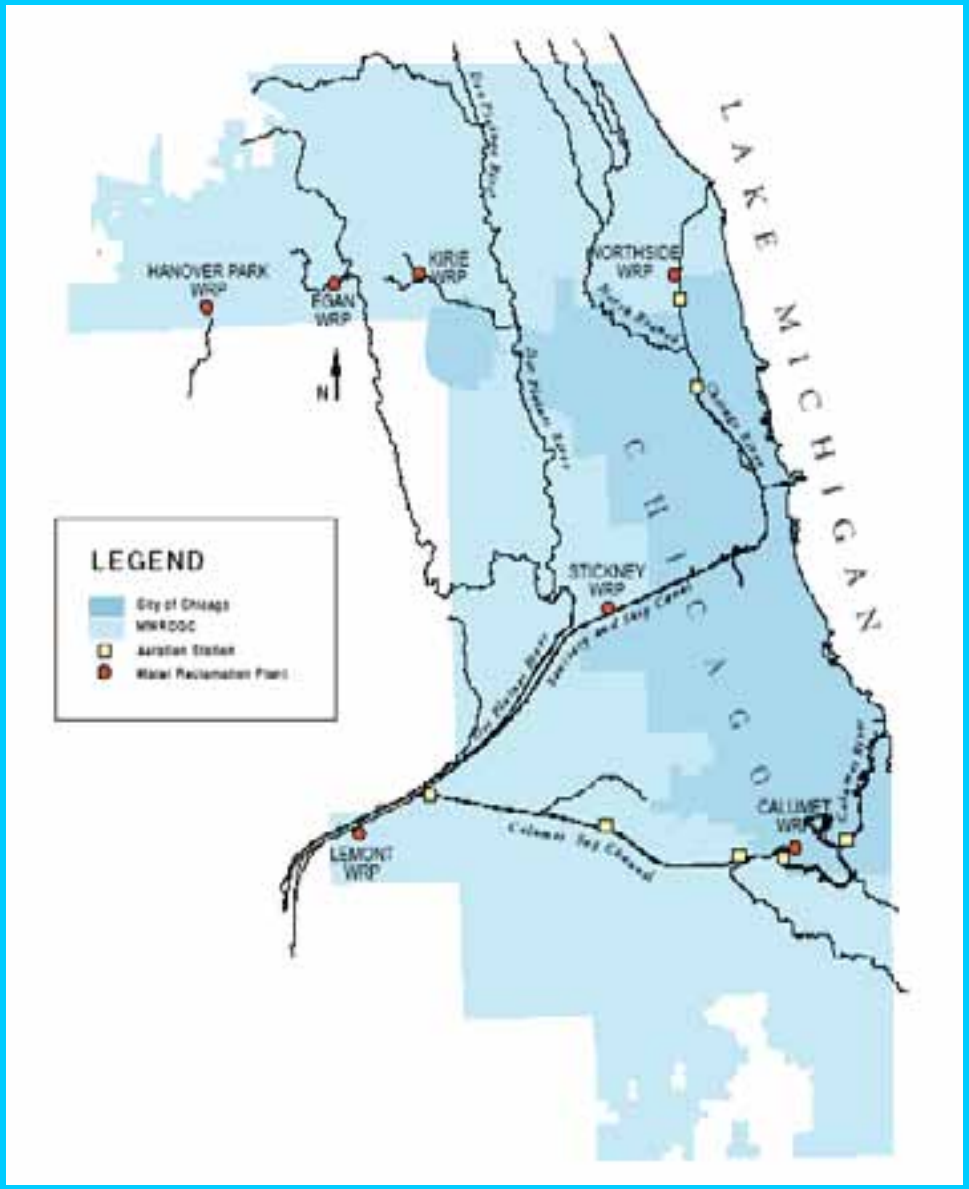
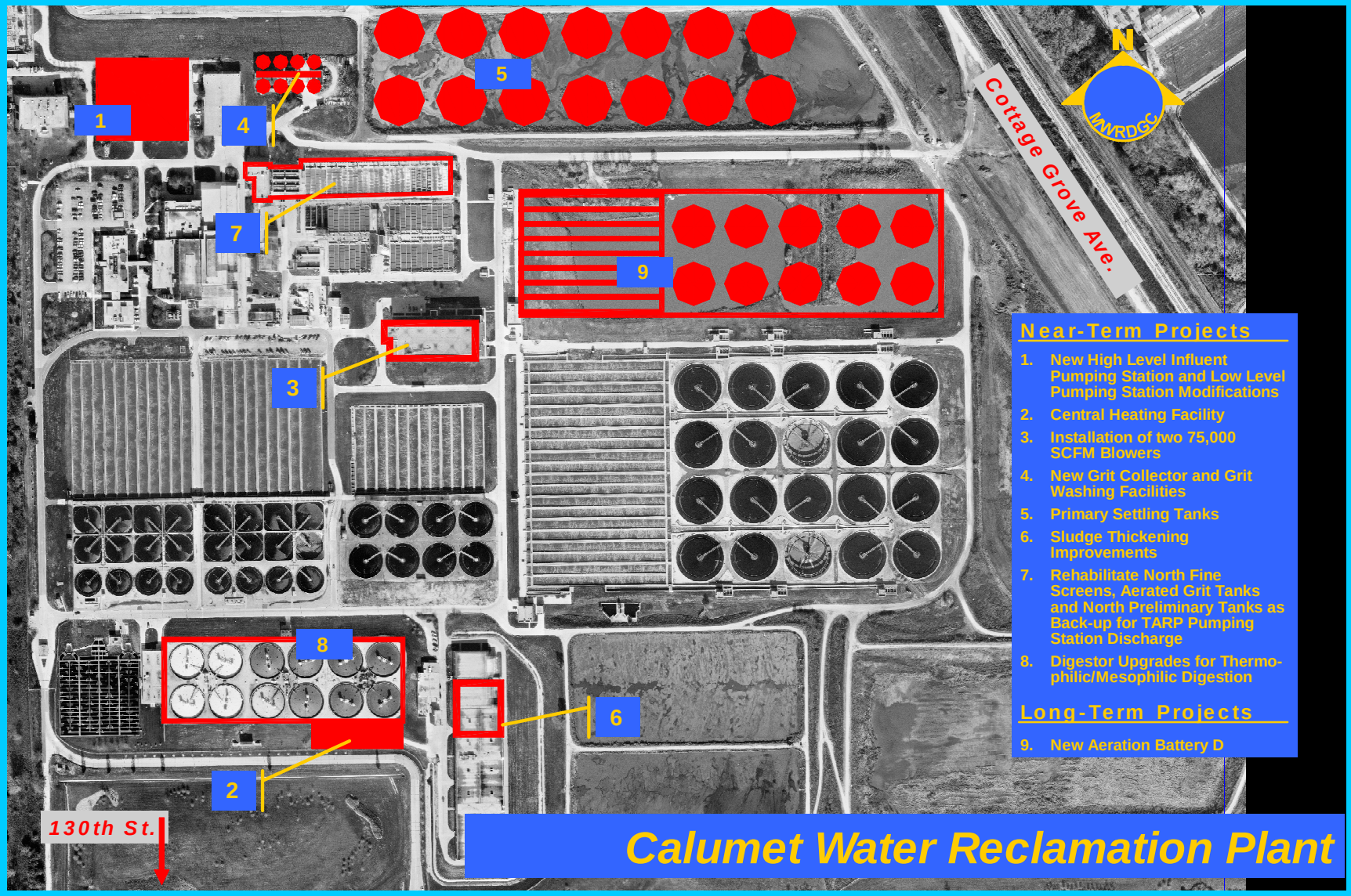
OUTLINE

- Plant Master Planning
- McCook and Thornton Reservoir Progress
- Use Attainability Analysis Study
- CIP Economic Forecast
- Ecological Initiatives

MWRD Waterways and Facilities





Near-Term Projects

1. New High Level Influent Pumping Station and Low Level Pumping Station Modifications
2. Central Heating Facility
3. Installation of two 75,000 SCFM Blowers
4. New Grit Collector and Grit Washing Facilities
5. Primary Settling Tanks
6. Sludge Thickening Improvements
7. Rehabilitate North Fine Screens, Aerated Grit Tanks and North Preliminary Tanks as Back-up for TARP Pumping Station Discharge
8. Digestor Upgrades for Thermo-philic/Mesophilic Digestion

Long-Term Projects

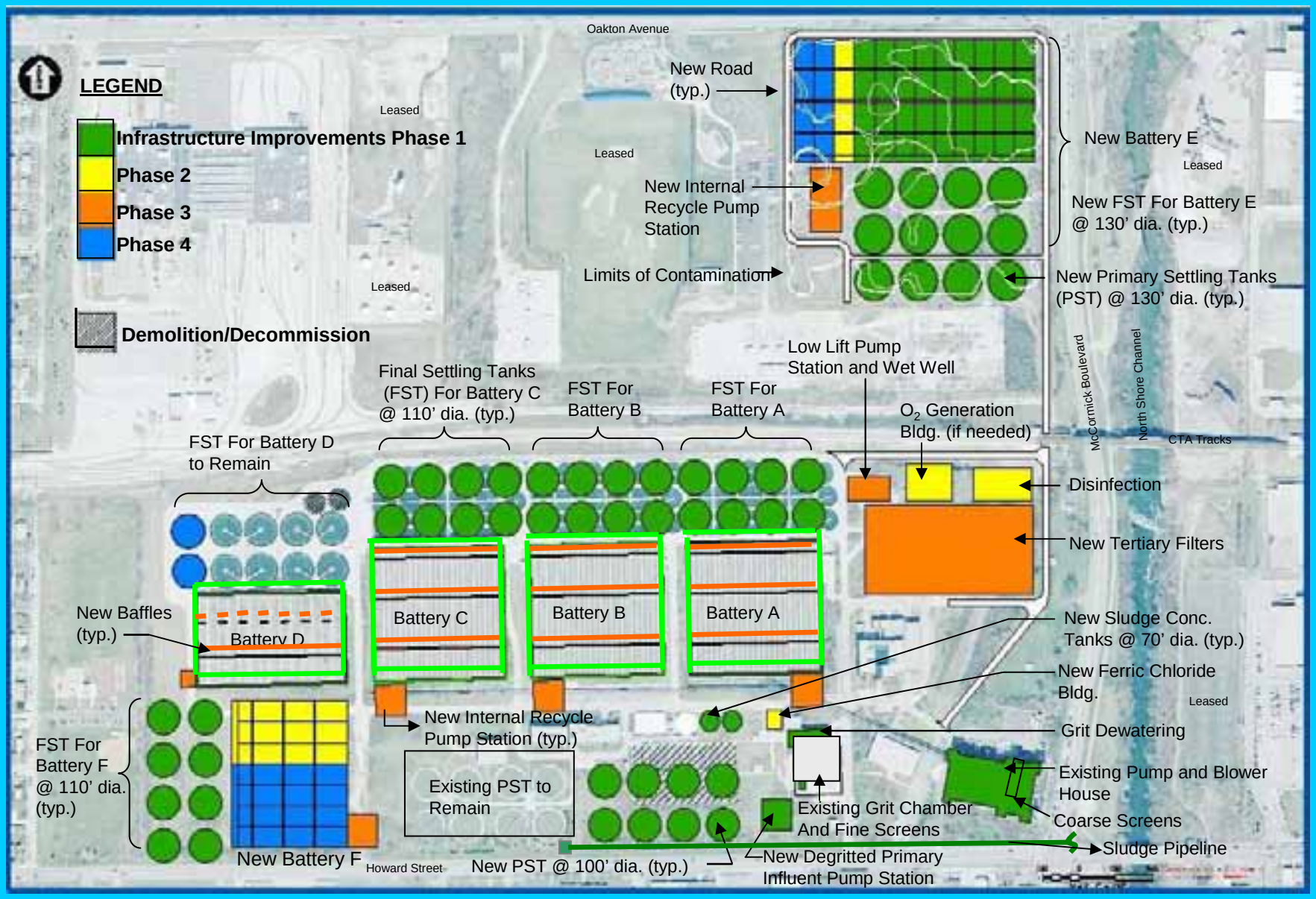
9. New Aeration Battery D

Calumet Water Reclamation Plant

North Side Water Reclamation Plant

CALUMET WRP MASTER PLAN

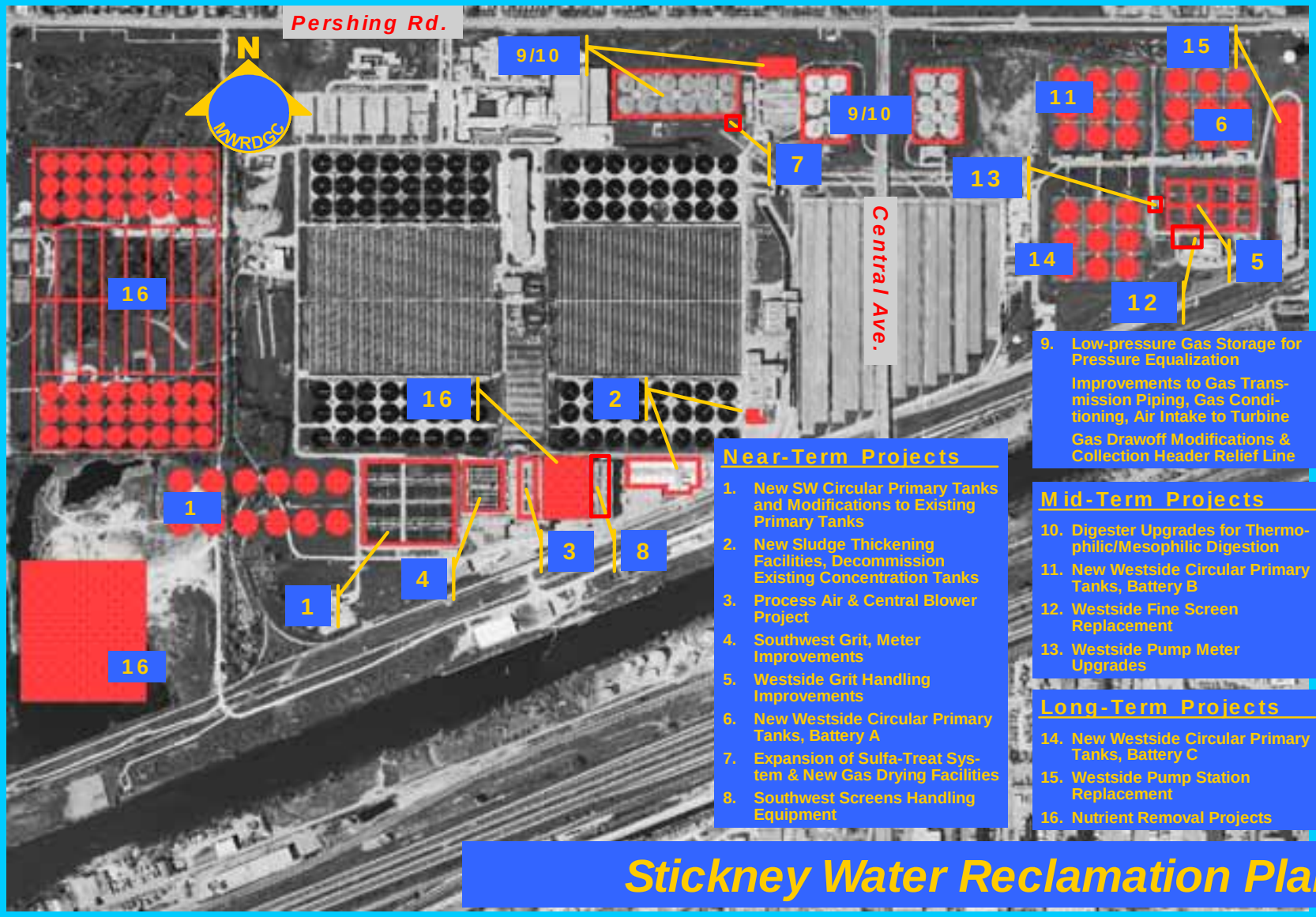
- New 430 mgd pumping station
- Additional primary settling tanks
- Additional aeration and clarification battery
- Other miscellaneous improvements
- $310 million



North Side WRP Master Plan Recommendations

NORTH SIDE WRP MASTER PLAN

- Additional aeration and clarification battery
- Additional primary settling tanks
- Blower and pump upgrades
- Other miscellaneous improvements
- $1 billion



Near-Term Projects

1. New SW Circular Primary Tanks and Modifications to Existing Primary Tanks
2. New Sludge Thickening Facilities, Decommission Existing Concentration Tanks
3. Process Air & Central Blower Project
4. Southwest Grit, Meter Improvements
5. Westside Grit Handling Improvements
6. New Westside Circular Primary Tanks, Battery A
7. Expansion of Sulfa-Treat System & New Gas Drying Facilities
8. Southwest Screens Handling Equipment
9. Low-pressure Gas Storage for Pressure Equalization
   Improvements to Gas Transmission Piping, Gas Conditioning, Air Intake to Turbine
   Gas Drawoff Modifications & Collection Header Relief Line

Mid-Term Projects

10. Digester Upgrades for Thermophilic/Mesophilic Digestion
11. New Westside Circular Primary Tanks, Battery B
12. Westside Fine Screen Replacement
13. Westside Pump Meter Upgrades

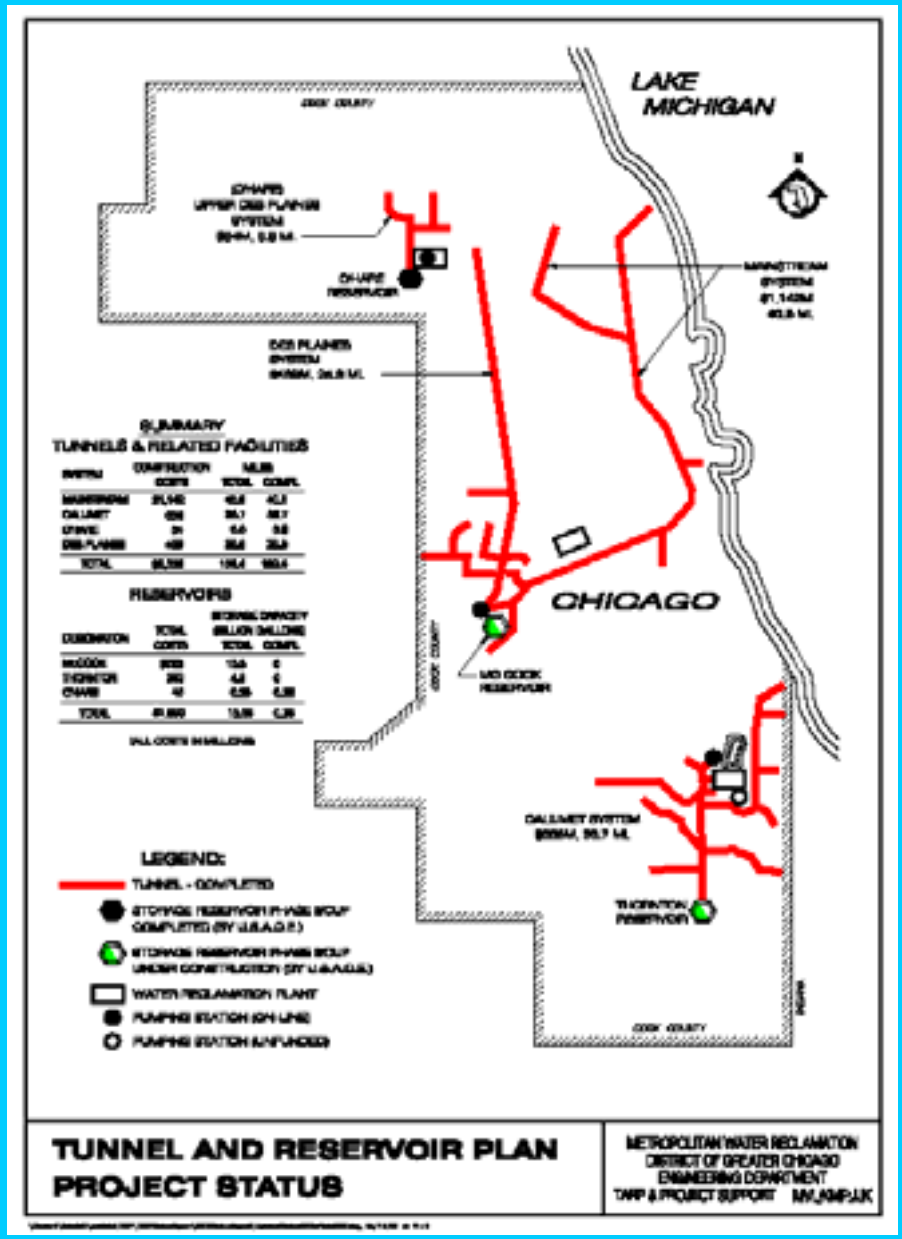
Long-Term Projects

14. New Westside Circular Primary Tanks, Battery C
15. Westside Pump Station Replacement
16. Nutrient Removal Projects

Stickney Water Reclamation Plant

STICKNEY WRP MASTER PLAN

- New primary settling tanks
- Digester upgrades
- New West Side pumping station
- Other miscellaneous improvements
- $430 million


LAKE
MICHIGAN
CHICAGO
SUMMARY
TUNNELS & RELATED FACILITIES
RESERVOIRS
LEGEND:
TUNNEL - COMPLETED
TUNNEL AND RESERVOIR PLAN
PROJECT STATUS
METROPOLITAN WATER RECLAMATION
DISTRICT OF GREATER CHICAGO
ENGINEERING DEPARTMENT

TARP SYSTEMS

Mainstream and Des Plaines

- 66.1 miles of tunnels
- McCook Reservoir
- Mainstream Pumping Station

Calumet

- 36.7 miles of tunnels
- Thornton Reservoir
- Calumet TARP Pumping Station

Upper Des Plaines

- 6.6 miles of tunnels
- O'Hare CUP Reservoir
- Kirie WRP Pumping Station

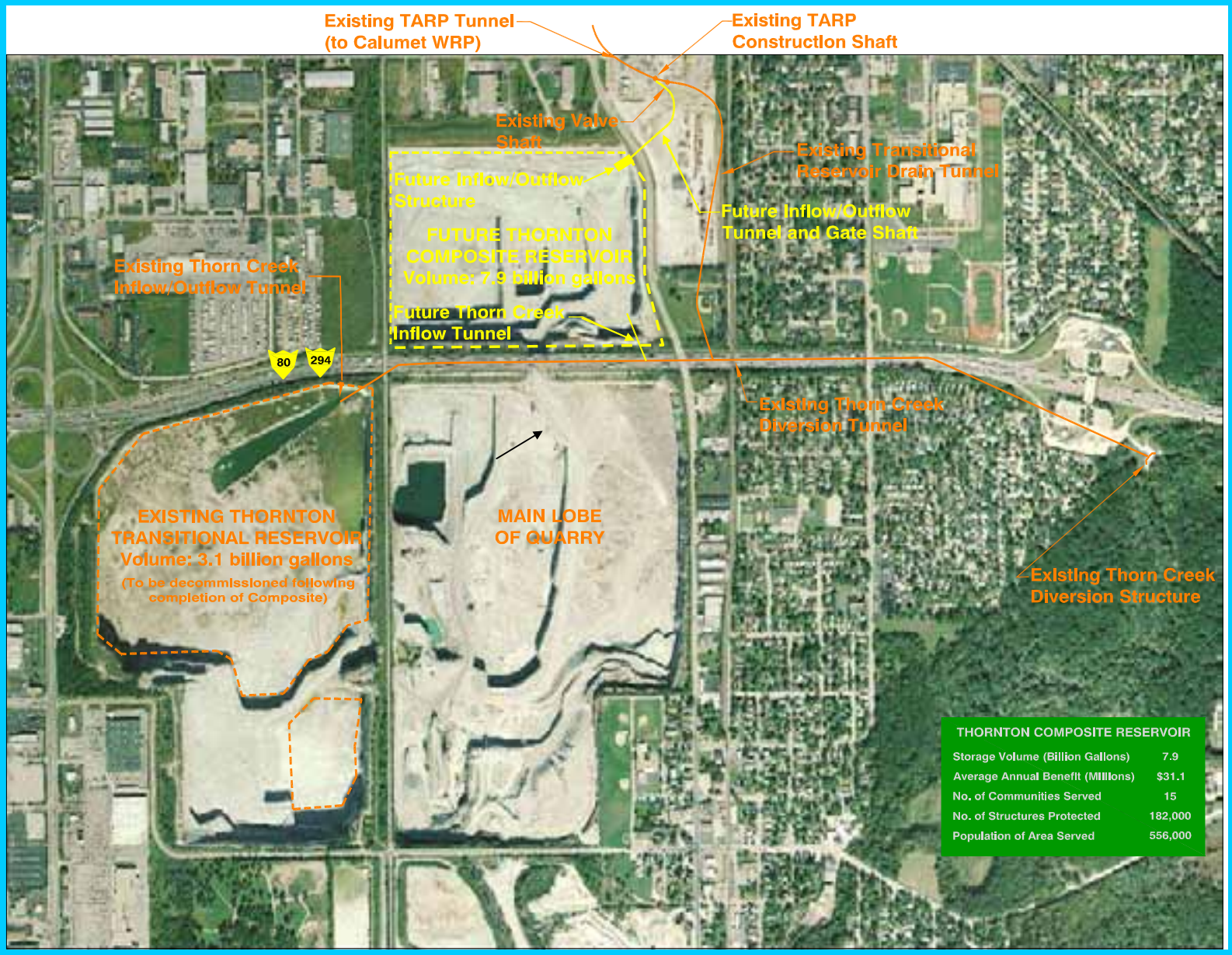
OVERALL TARP FACILITIES

Tunnels

- 109.4 miles of rock tunnels, 9 to 33 feet in diameter, 150 to 340 feet deep
- 3 pumping stations to dewater tunnels and reservoirs
- 250+ drop shafts 4 to 25 feet in diameter
- 600+ connecting and control structures
- total CSO storage capacity = 2.4 billion gallons

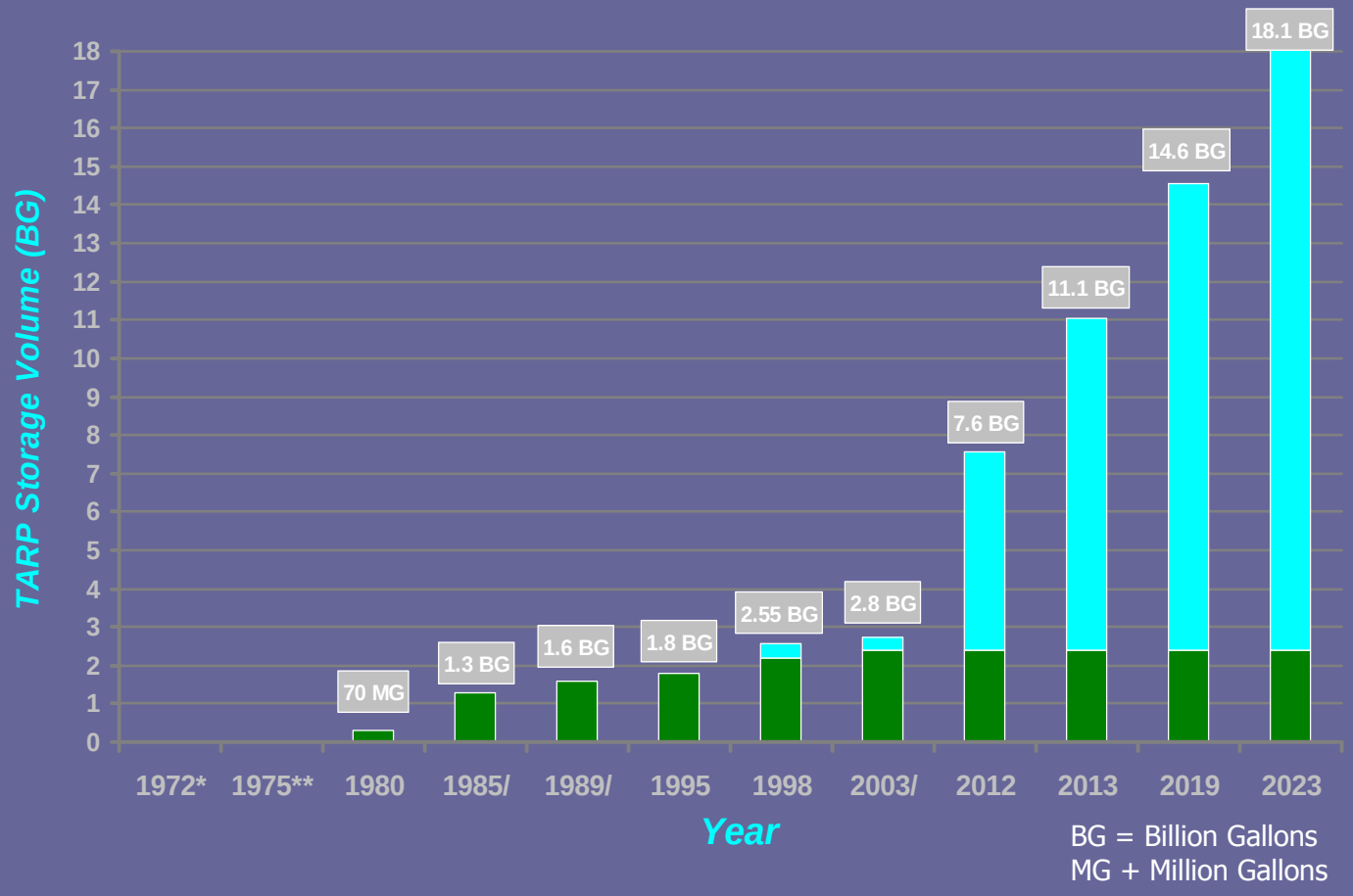
Reservoirs

- 3 large surface reservoirs
- total CSO storage capacity = 15.6 billion gallons


Existing TARP Tunnel
(to Calumet WRP)
Existing TARP
Construction Shaft
Existing Valve
Shaft
Existing Transitional
Reservoir Drain Tunnel
Future Inflow/Outflow
Structure
FUTURE THORNTON
COMPOSITE RESERVOIR
Volume: 7.9 billion gallons
Future Inflow/Outflow
Tunnel and Gate Shaft
Existing Thorn Creek
Inflow/Outflow Tunnel
Future Thorn Creek
Inflow Tunnel
80
294
Existing Thorn Creek
Diversion Tunnel
EXISTING THORNTON
TRANSITIONAL RESERVOIR
Volume: 3.1 billion gallons
(To be decommissioned following
completion of Composite)
MAIN LOBE
OF QUARRY
Existing Thorn Creek
Diversion Structure
THORNTON COMPOSITE RESERVOIR
Storage Volume (Billion Gallons) 7.9
Average Annual Benefit (Millions) $31.1
No. of Communities Served 15
No. of Structures Protected 182,000
Population of Area Served 556,000


Existing Des Plaines Tunnel
Existing Dewatering Tunnel to Stickney Water Reclamation Plant
Existing Mainstream Tunnel
Existing Mainstream Pumping Station
Distribution Tunnels & Control Chamber Under Construction
Future Inflow Tunnel and Gate Shaft
Future McCook Reservoir Stage 1 Volume: 3.5 bil. gal.
Future McCook Reservoir Stage 2 Volume: 6.5 bil. gal.
McCOOK RESERVOIR
Storage Volume (Billion Gallons) 10
Average Annual Benefit (Millions) $83.2
No. of Communities Served 37
No. of Structures Protected 1,240,000
Population of Area Served 3,100,000

PLANNED TARP CSO STORAGE VOLUME



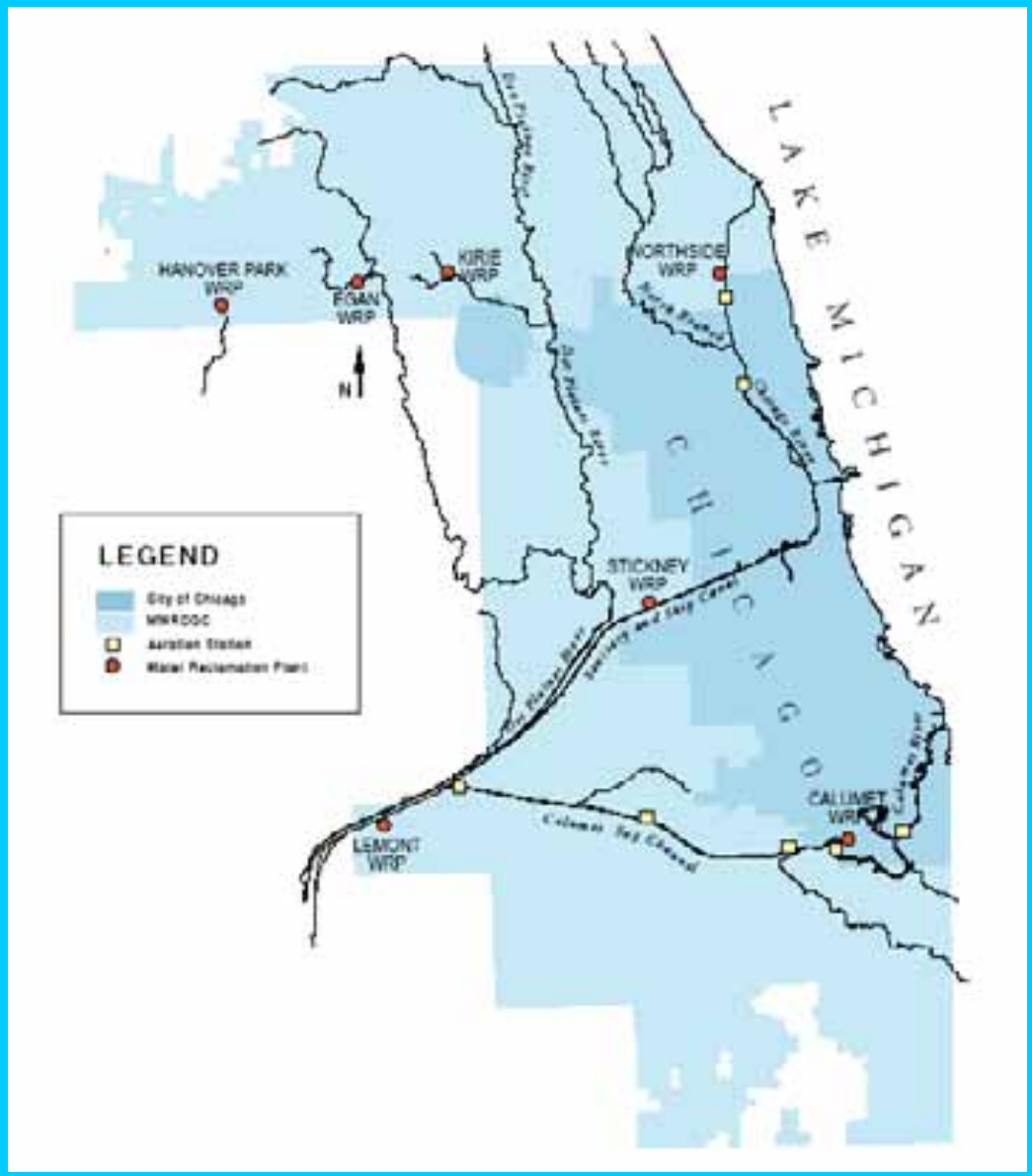
*1972 - Clean Water Act enacted. TARP program adopted by MWRDGC.

**1975 - TARP tunnel construction initiated.

USE ATTAINABILITY ANALYSIS STUDY

- IEPA conducting comprehensive study
- Review Secondary Contact Use class
- Establish aquatic life use classes
- Establish recreational use classes
- IEPA proposes rulemaking
- IPCB adopts uses and standards

MWRD Waterways and Facilities



WATER QUALITY ISSUES

- Summer season dissolved oxygen sags
- Wet weather impacts dissolved oxygen
- Relatively high coliform counts
- High summer season temperatures

TECHNOLOGIES TO ACHIEVE OBJECTIVES

- Low flow augmentation
- Supplemental aeration
- Effluent disinfection
- Electrical generating cooling systems

MWRD LONG-TERM FINANCIAL PLANNING 2006 - 2025

- **Current Capital Plan and Operating Impacts**
  - TARP Phase 1 & 2
  - Facilities Planning (Master Plans)
  - Sewer Rehabilitation
- **Future Requirements and Operating Impacts**
  - Ongoing - Facilities Planning (Master Plans) and Sewer Rehabilitation
  - Nutrient Removal
  - Flow Augmentation and Supplemental Aeration
  - Disinfection of Effluent
- **Financing**
  - Revenues and Revenue Constraints
  - Operating impact of Capital Projects

MWRD LONG-TERM FINANCIAL PLANNING 2006 - 2025

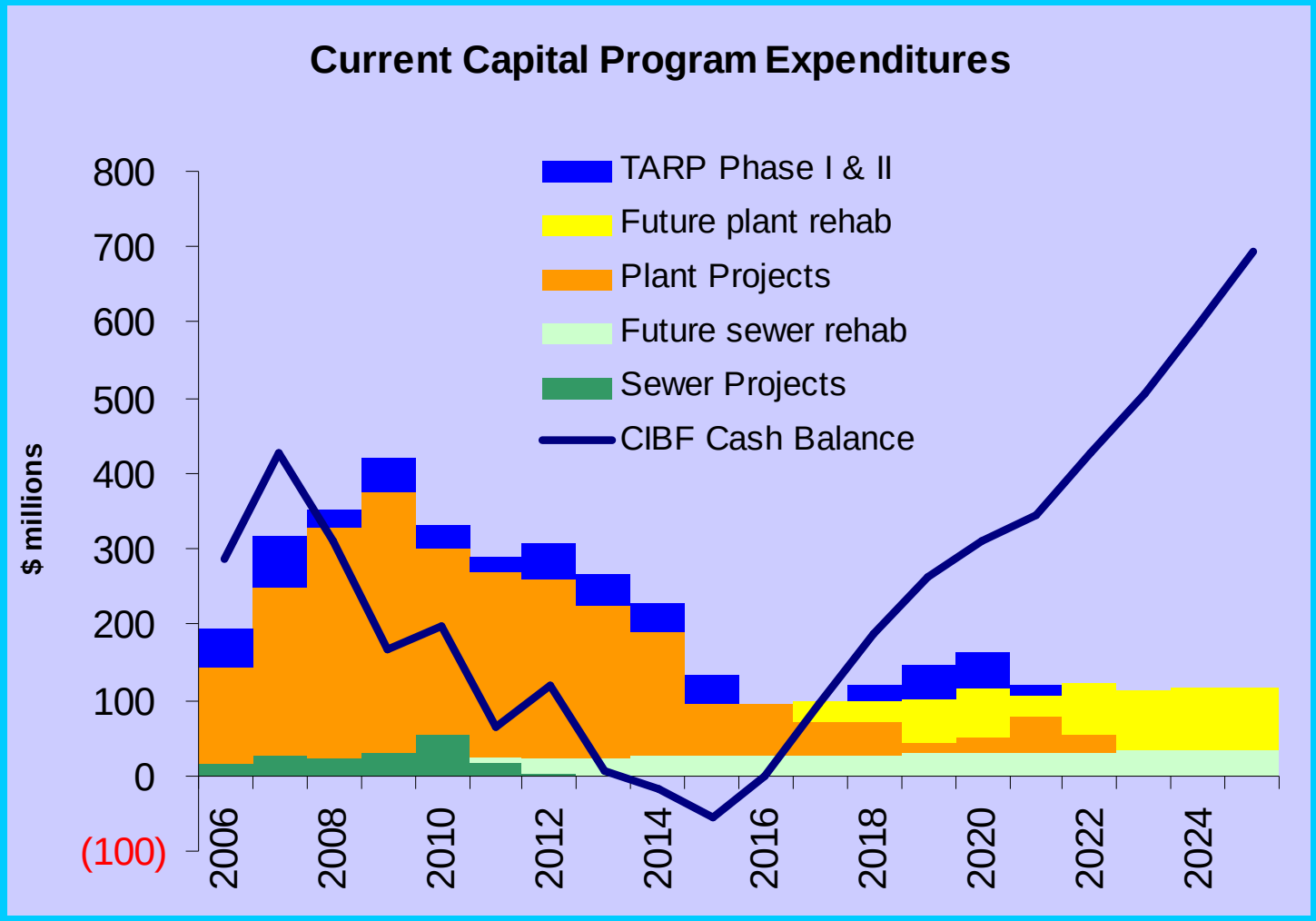
Current Projects TARP, Plant Master Plans & Sewers	$4,030
Future Nutrient removal, Flow Augmentation & Aeration, and Disinfection	2,511
Total Expenditures	$6,541

Capital Financing 2006-2025

$ in millions (m)

TOTAL Bond Issues *	$	3,500
* $150 m PER YEAR		
Non-referendum Authority thru 2016		1,800
Limited		1,350
Unlimited		450
New Non-referendum Authority in 2017		1,700
State Revolving Fund $40 m per year		800
Investment Income & Cash on Hand		435
Total Resources Available	$	4,735
Current Projects	$	4,030
Future & Current Projects	$	6,541

MWRD LONG-TERM FINANCIAL PLANNING 2006 - 2025 vs. FINANCIAL RESOURCES



Operating Funds Constraints

- Property Tax Extension Limitation Law (Tax Cap)
  - Levy increases for operating funds are limited to the CPI or 5%, whichever is less
  - The primary component of increased operating costs for the TARP reservoirs is energy. The potential increase of $37 million will be absorbed by the operating funds.
  - The additional increment of $30.5 million for disinfection and $110 million for nutrient removal will exceed available levies under the Tax Caps.

Native Prairie Landscape Conversion

- Ecological improvement of plant sites
- Increase rainfall infiltration
- Enhance biodiversity and wildlife habitat
- Reduce landscape maintenance cost

Native Prairie Vs. Conventional Turf Maintenance
First Two Years Cost Comparison

	Native Prairie Dollars per acre	Conventional Turf Dollars per acre
Mowing	183	1,200*
Weeding	545	100
Overseeding	702	100
Total	**1,430**	**1,400**

* Based on 12 mowings per year

Lemont Water Reclamation Plant

North Side Water Reclamation Plant

Wetlands

- Ecological improvement of corporate property
- Nitrogen removal
- Carbon and phosphorus sequestration
- Mitigation banking

Conventional Nutrient Removal Technologies

Lowest technically achievable effluent standards

TN – 3 mg/L

TP – 0.5 mg/L

USEPA Nutrient Criteria, Northern Illinois

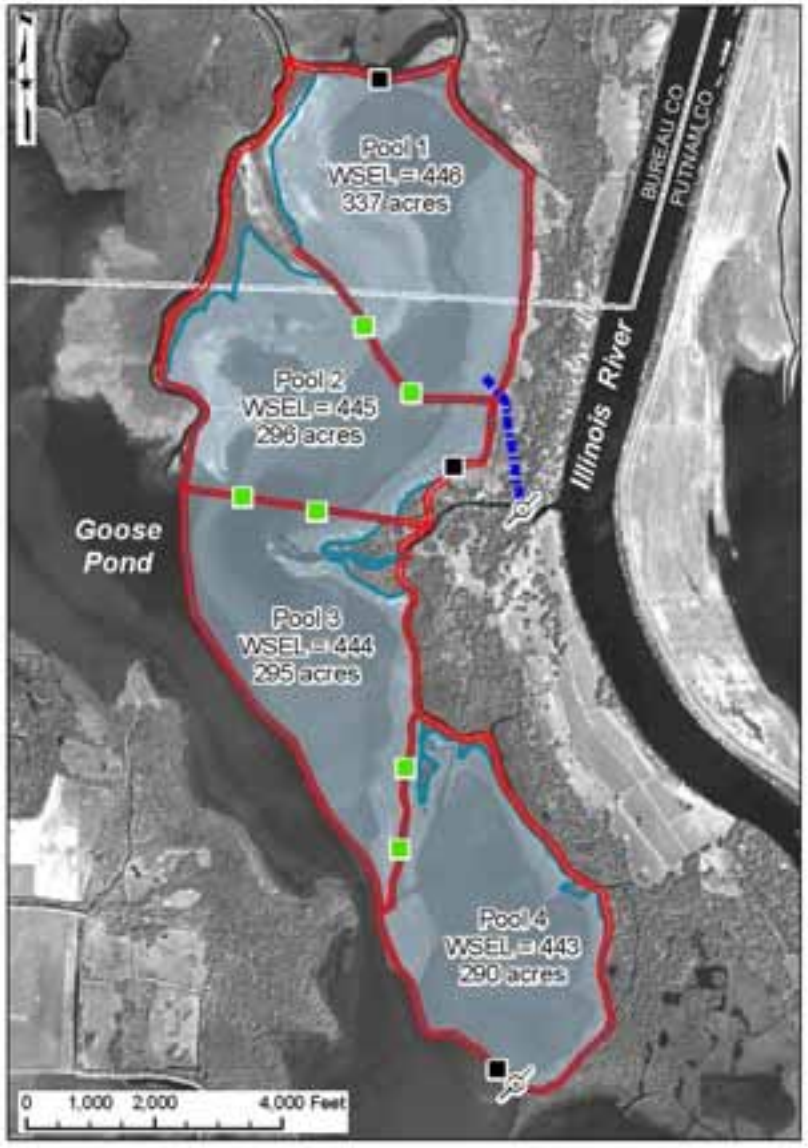
TN – 2.18 mg/L

TP – 0.076 mg/L

Comparing Control Technologies

	Conventional	Wetlands
Capital Cost	High	Low
Operating Cost	High	Low
Resource Demand	High	Low
Benefits	Singular	Multiple
Present Worth*	$2.4 B	$0.9 B

* (Source: Hey, *et al*., 2005)

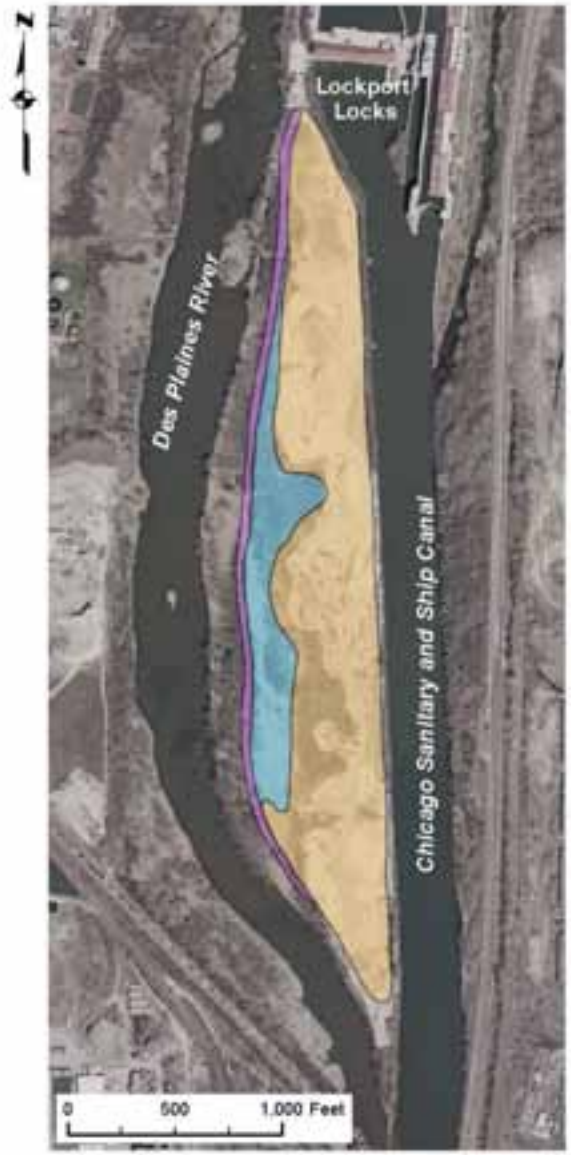


THE WETLANDS INITIATIVE

Goose Pond Conceptual Plan
Bureau & Putnam Counties, IL

- Spillways
- Control Weirs
- Pumping Stations
- Water Flow
- Berms
  Total 53,700 ft
- Wetland Pools
  1,219 acres in 4 pools

April 2005 Satellite Image



THE WETLANDS INITIATIVE

Powerhouse Marsh
Will County, Illinois

Proposed Plan

Creation	34.5 acres
Enhancement	8.1 acres
Buffer	3.5 acres

2005 Digital Orthophoto from the Illinois State Geologic Survey

Collateral Channel

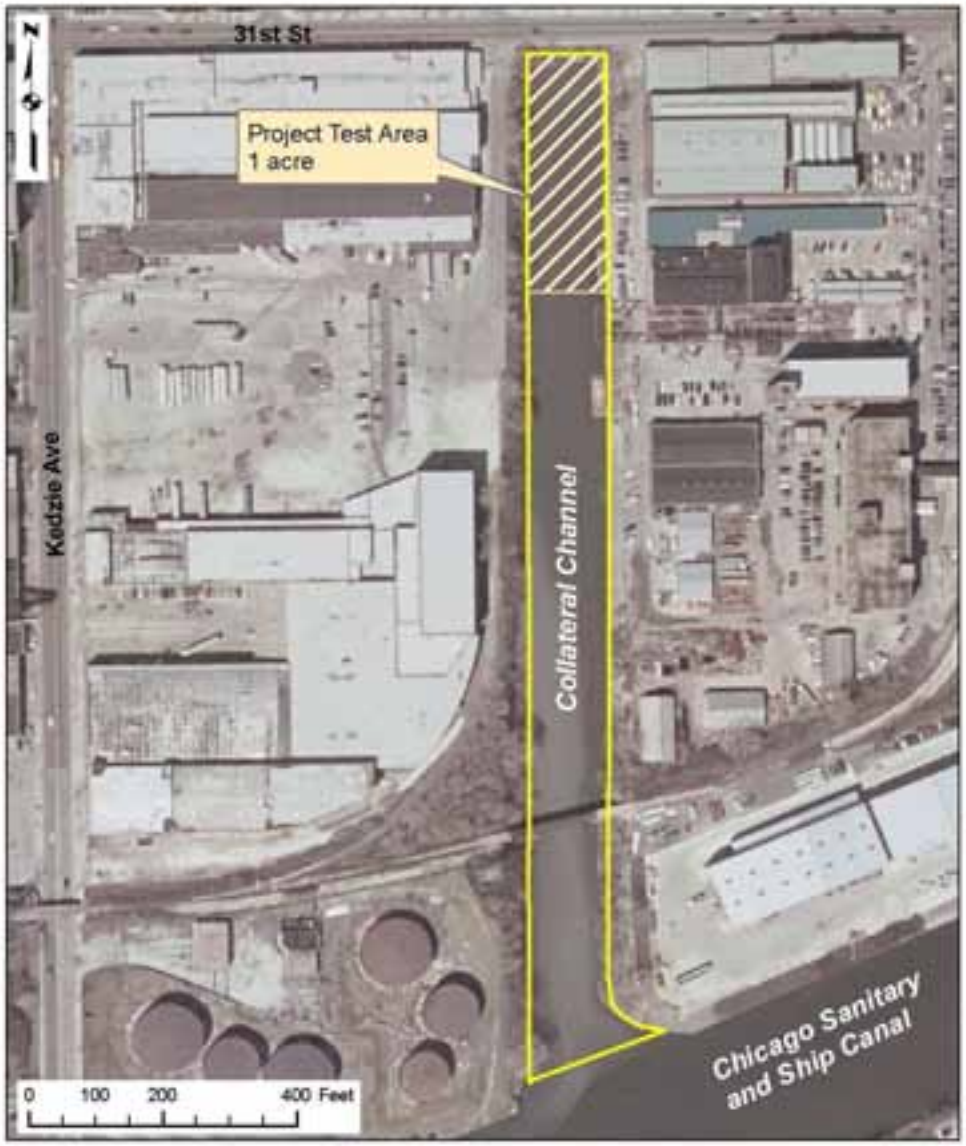
Ecological improvement of contaminated sediments

Unused off-channel slip

Stagnant flow +99% of time

Legacy sediment contamination

CSO two times per year



THE WETLANDS INITIATIVE

Metropolitan Water Reclamation District of Chicago Collateral Channel

2005 Digital Orthophoto
from Illinois State Geologic Survey

HOW TO CONTACT THE MWRD:

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